THE LACK OF A DESIGNATED NATIONAL IN-TRANSIT VISIBILITY SYSTEM AFFECTS THE SYNCHRONIZATION OF INFORMATION SHARING AND THE TIMELY DISTRIBUTION OF MATERIALS DURING NATURAL DISASTER EFFORTS

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This research discusses the challenges of providing timely distribution of supplies during hurricane relief operations due to the lack of a designated national in-transit visibility (ITV) system. Historical lessons learned from the hurricane that devastated New Hampshire in 1635 reveal that similar trends existed during Hurricane Andrew in 1992 and during Hurricane Katrina in 2005. The creation of Federal Emergency Management Agency (FEMA) and United States Northern Command (USNORTHCOM) allocated resources and capabilities toward hurricane relief operations. FEMA's flexible initiatives on establishing a common operating picture architecture may fall short in tightening local officials' efforts to develop an interoperable ITV system that links into national systems. USNORTHCOM's ITV concept of operations plans clearly outlines the ITV program that is best for all agencies involved in response efforts. On 12 January 2010, Operation Unified Response - Haiti's earthquake relief operations, demonstrated that the age-old trend continues to challenge the joint interagency environment. Therefore, this research recommends modification to FEMA's current common operating picture compliance policy or the strict enforcement of an established concept of operations plan on ITV.

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THE LACK OF A DESIGNATED NATIONAL IN-TRANSIT VISIBILITY SYSTEM AFFECTS THE SYNCHRONIZATION OF INFORMATION SHARING AND THE TIMELY DISTRIBUTION OF MATERIALS DURING NATURAL DISASTER EFFORTS, by Major Tacildayus Andrews, 65 pages.

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TABLE OF CONTENTS

Page

MASTER OF MILITARY ART AND SCIENCE THESIS APPROVAL PAGE iii

ABSTRACT iv

ACKNOWLEDGMENTS v

TABLE OF CONTENTS vi

ACRONYMS viii

CHAPTER 1 INTRODUCTION 1

The Problem 1
Primary Research Question 1
Secondary Research Questions 1
Key Terms 2
Limitations 3
Significance of this Research 4
Background 4
The Establishment of FEMA 4
The Activation of Northern Command 7
The History of In-Transit Visibility 9
Summary 10

CHAPTER 2 LITERATURE REVIEW 12

Category 1–Federal Government Documents 12
Category 2–Military Doctrine and Standing Operating Procedures 16
Category 3–Book 19
Category 4–Internet Sites and Interviews 20
Interviews 22
Summary 24

CHAPTER 3 RESEARCH METHODOLOGY 25

Primary Research Method: Interviews, Phone Conversations and Emails 25
Secondary Research Method: Question and Answer Methodology 27
Secondary Research Method: Qualitative Narrative Analysis 28
Research Planned But Not Executed 29
Summary 30

CHAPTER 4 ANALYSIS 31

Primary Research Analysis 31
Answers to Secondary Research Questions 33
What Redundant ITV Lessons Learned Surfaced During Two Major Hurricanes? 33
What National Policy Governs the Establishment of Interoperable Communication Systems? 36
What Department of Defense National ITV System is in Place? 37
Does DoD have the Capability to Support a National ITV System? 37
What ITV Systems Are Used by each Player? 38
Information Technology Systems Used by FEMA for ITV 38
Information Technology Used by the Military for ITV 39
Summary 40
Category 1–Federal Government Documents 41
Category 2–Military Doctrine and Standing Operating Procedures 43
Category 3–Books 44
Category 4–Internet Sites and Interviews 45
Internet Sites 45
Interviews 46
Summary 46

CHAPTER 5 RECOMMENDATIONS 48

Future Research Needed on ITV 49
Summary 50

APPENDIX A PROPOSED CONVENIENT SAMPLE QUESTIONNAIRE 51

BIBLIOGRAPHY 52

INITIAL DISTRIBUTION LIST 56

ACRONYMS

AIS	Automated Information System
AIT	Automatic Identification Technology
AMC	Army Materiel Command
BCS3	Battle Command Sustainment Support System
CC&I	Command, Control, and Interoperability Program
CCIR	Commander's Critical Information Requirement
COP	Common Operating Picture
CWID	Coalition Warrior Interoperability Demonstration
DHS	Department of Homeland Security
DLA	Defense Logistics Agency
DMD	Distribution Management Division
DoD	Department of Defense
DRF	Disaster Relief Fund
FEMA	Federal Emergency Management Agency
FORSCOM	Forces Command
FM	Field Manual
GAO	Government Accountability Office
GCCS	Global Command and Communication System
GTN	Global Transportation Network
HUD	Housing and Urban Division
IG	Inspector General
IRRIS	Intelligent Road/Rail Information System
IT	Information Technology Systems

ITV	In-transit visibility
LIMS	Logistics Information Management System
JP	Joint Publications
JLE	Joint Logistic Environment
LMD	Logistics Management Directorate
NIMS	National Incident Management System
PKEMRA	Post-Katrina Emergency Management Reform Act
PM-J-AIT	Project Manager Joint-Automatic Identification Technology
SOPs	Standing Operating Procedures
TAV	Total Asset Visibility
TC-AIMS II	Transportation Coordinators-Automated Information for Movement System II
TC-AIMS	Transportation Coordinator's Automated Information for Movement System
T&E	Test & Evaluation and Standards
USNORTHCOM	United States Northern Command
USSOUTHCOM	United States Southern Command
USTRANSCOM	United States Transportation Command

CHAPTER 1

INTRODUCTION

> Automatic Identification Technology and Asset Visibility Puts Trust in the Supply Chain.
>
> — General Duncan McNabb, Commander USTRANSCOM

The Problem

Lessons learned from the first major catastrophic hurricane in the United States are still applicable in the 21st century. Today, the ability for two key agencies, the Federal Emergency Management Agency (FEMA) and United States Northern Command (NORTHCOM), to gain a common operating picture on the availability of assets and the location of supplies as they move through the distribution pipeline, continues to frustrate operations.

Primary Research Question

The purpose of this study is to answer the question: is there a need for a national in-transit visibility (ITV) system to help establish a common operating picture, sharing information, synchronizing operations, and distributing materials in a timely manner during natural disaster relief operations?

Secondary Research Questions

In order to find a viable solution to the primary question, several more questions need to be addressed and answered. These questions, listed below, will also aid in identifying the strategic problem surrounding ITV during natural disaster operations.

1. What redundant ITV lessons learned continue to surface during hurricane relief operations?

2. What national policy governs the establishment of interoperable communication systems?

3. What Department of Defense (DoD) national ITV system is in place?

4. Does DoD have the capability to support a national ITV system?

5. What ITV systems are used by the two key players involved in disaster relief operations?

Key Terms

To better understand the supply chain management system as it relates to in-transit visibility, a few key words need to be defined. These words are used throughout the research paper and are key terms used in government and military logistics communities when discussing the movement of supplies through the pipeline, from point of origin to final destination. The definitions of the words are derived from military doctrine and FEMA's published documents.

Automated Information System (AIS) receives, translates and retransmits AIT electronic logistics data to visibility systems, which then capture and store logistic information used by players to track and influence asset movement throughout the distribution pipeline. Two examples of AIS systems are Transportation Coordinators-Automated Information for Movement System II (TC-AIMS II) and the Global Battle Command Sustainment Support System (BCS3).

Automatic Identification Technology (AIT) encompasses a variety of data storage and/or carrier technologies, such as bar codes, magnetic strips, satellite tracking, and

radio frequency identification tags used for marking or "tagging" individual items, equipment, air pallets, or containers.

Common Operating Picture is the display of relevant information shared by more than one player to help facilitate collaborative planning and to gain situational awareness.

Interoperability is a communication term used to describe the ability of systems to communicate through voice, data, or video in real time. Established formats and standard operating procedures are necessary in the architecture program to achieve interoperability.

In-Transit Visibility (ITV) is the ability to track the identity, status, and location of Department of Defense units, non-unit cargo and personal property from origin to consignee or destination across the range of military operations.

Total Asset Visibility (TAV) is managed by the Defense Logistics Agency (DLA). The system provides information on the location, movement, status, and identity of units, personnel, equipment and supplies. Asset visibility provides the ability to manage the overall performance of DoD's joint logistics practices. TAV receives data feeds from many different computer systems to gain a total asset visibility status.

Limitations

The boundaries of this paper are restricted to natural disasters. The research addresses only hurricanes that have occurred within the geographical boarders and territories of the United States since these natural disasters tend to remain an enormous challenge in supply management accountability. Lastly, the research is confined to the actions or the lack of actions taken by FEMA and NORTHCOM concerning ITV systems.

Significance of this Research

This research is significant to government and military communities because of the tremendous importance of having efficient and responsive logistics operations in national incidents. This research is also important to NORTHCOM as the command attempts to gain visibility of commodities to better plan, manage and support natural disasters. The analysis will try to determine the root cause for the lack of emphasis on ITV. Additionally, the analysis will conclude if the systemic trend stems from either the lack of unambiguous policies or the lack of comprehensive standard operating procedures.

Background

The following pages will describe the creation of FEMA and NORTHCOM. It will focus on each player's organizational structure, why each organization was created, and how their mission is related to disaster relief. From there, this study will transition to the history and significance of ITV.

The Establishment of FEMA

The wrath of natural disasters is becoming all too frequent. Some religious preachers would argue that the frequency is a sign of the end of time. Scientists and environmentalists would blame it on global warming. Whether it is doomsday or climate changes, the frequencies and mass destruction left after such natural disasters is a challenge. In 1635, the first known large scale hurricane devastated the New Hampshire

coast.[1] The incident was unpredictable, catastrophic and the local citizens were unprepared to handle the magnitude of the devastation. It took several more hurricanes and more than 100 years before the government would intervene. The Congressional Act of 1803 marked the first federal government assistance program for a natural incident in America. A century and a half later, the Natural Disaster Act of 1950 gave the President the power to declare an incident a natural disaster in order to receive federal funding. In that same year, the Civil Defense Act outlined nationwide procedures, with the federal government in the lead, for homeland defense and national incidents. In the 1960s and 1970s, several major hurricanes crashed into the coasts of the United States. During that era, all national incidents fell under the administration of the Department of Housing and Urban Division (HUD). No new directorates or divisions augmented HUD to manage the large-scale mission and soon thereafter HUD became overwhelmed. In 1978, President Jimmy Carter created a new agency called the Federal Emergency Management Agency (FEMA) to serve as the command and control center for the synchronization of all government, interagency and non-government players for disaster relief operations. The Agency's focus revolves around centralized planning and decentralized execution of all players involved. The year 2003 marked a change in philosophy on homeland defense. President George W. Bush consolidated several different organizations under the newly formed Homeland Security Defense Agency. The Agency expanded its role and responsibility to include national incidents both "natural and man-made."[2] In September

[1]Hurricanehistory.com, Website, www.hurricanehistory.com (accessed 9 May 2010).

[2]*Congressional Act of 1803*, 2.

of that year, the President also issued Presidential Directive 5 (HSPD-5), which directed the Secretary of Homeland Security to "develop and administer a National Incident Management System (NIMS)" to validate state's preparedness.[3] The vision behind NIMS was to create "effective emergency management and incident response activities [that] rely on flexible communications and information systems that provide a common operating picture to emergency management/response personnel and their affiliated organizations."[4] The FEMA Fiscal Year (FY) 2009 NIMS Implementation Objectives are comprised of five key components that each state must address in order to help mitigate disasters. These components are: adoption, preparedness, communication and information management, resource management, and command and management.[5] The plan lays out detailed milestones that need to be either initiated or completed. In the Communication and Information Management component of NIMS Implementation Objectives, it directs that by 2007, each state must "utilize systems, tools, and processes to present consistent and accurate information (e.g., common operating picture[COP]) during an incident/planned event."[6]

Until 2005, FEMA played a passive role in natural disasters. The majority of their contributions came in the form of money. The Robert T. Stafford Act established the appropriated fund called the Disaster Relief Fund (DRF). The DRF provides immediate

[3]Department of Homeland Security, "FEMA," http://www.fema.gov (accessed 10 September 2009).

[4]Ibid.

[5]Ibid.

[6]Ibid.

assistance in the form of cash grants and loans to assist individuals and organizations in expedited recovery. The Post-Katrina Emergency Management Reform Act (PKEMRA) of 2006 aligned FEMA directly under the Department of Homeland Security. The Act directed FEMA to lead "the Nation in a comprehensive emergency management system of preparedness protection, response, recovery, and mitigation."[7]

One of the divisions within FEMA's organizational structure is the Logistics Management Directorate (LMD). The LMD consists of six subordinate divisions. The division within the LMD responsible for providing oversight of and having overall supervision of commodity management is the Distribution Management Division (DMD). The DMD is responsible for the "warehouse facilities and transportation systems used to store, maintain, issue, distribute, and track supplies, services, material, and equipment."[8] Public Law 109-295, originating from the Katrina Act, directs FEMA to "develop a logistic system that provides visibility of disaster goods from procurement to delivery."[9]

The Activation of Northern Command

The 11 September 2001 terrorist attacks on critical infrastructures in New York City and Arlington changed the American mindset and approach to internal homeland security. On 1 October 2002, realizing that there was not enough manpower behind the defense of U.S. borders, President George W. Bush signed the Unified Command Plan

[7]Department of Homeland Security, Office of Inspector, *A Performance Review of FEMA's Disaster Management Activities in Response to Hurricane Katrina* (Washington, DC: Government Printing Office, 2006), 2.

[8]Ibid., 3.

[9]Ibid., 6.

establishing United States Northern Command (USNORTHCOM). The Unified Command Plan directs that all Service components operating in a determined geographical region fall under the command of a single commander. This military reorganization created a command and control structure that allows commanders the ability to achieve a unified mission. NORTHCOM's mission is to provide command and control of the Department of Defense's homeland security efforts and to coordinate military support to civil authorities in the United States, Alaska, Canada, Mexico, Gulf of Mexico, the Straits of Florida, and 500 nautical miles off US borders.[10] NORTHCOM leverages its capabilities only when a state's capabilities are overwhelmed and when tasked by the Secretary of Defense to intervene. If called to respond, NORTHCOM follows the guidelines established in Army Regulation (AR) 500-60, *Employment of Army and Other Resources, Disaster Relief* (dated 1981). This regulation outlines federal statuary laws and federal regulations and directives for the use of military forces in support of civil authorities. Since its activation in 2002, NORTHCOM has taken an active role in establishing standard operating procedures and validating communication systems during natural disasters. In June 2009, NORTHCOM hosted the Coalition Warrior Interoperability Demonstration (CWID). The goal of the exercise was to test 14 of the 44 existing or future communication systems used by both military and civilians to identify critical interoperability shortfalls. The outcome will most likely produce new policies and procedures. Today, the synchronization, collaboration and integration of natural disasters extend over government and non-governmental agencies.

[10]U.S. Northern Command, Website, http://www.northcom.mil/ (accessed 9 May 2010).

The History of In-Transit Visibility

Great leaders learned early in military history the importance of knowing where supplies were located on the battlefield. The act of physically seeing and escorting the movement of commodities for an operation were, in a sense, in-transit visibility. From Alexander the Great's quartermaster officers understanding the importance of staying near the main line of communication in order not to overextend his forces, to Napoleon's rapid movement "en masse" across Europe, all have required detailed accountability of supplies. Like them, today's commanders acknowledge the importance of logistics in an operation. The benefit of today is that technology serves as an enabler to gain accurate information on commodities to assist commanders to determine if missions are feasible. Nevertheless, it has taken time to acquire this technology.

The first known modern strategic guidance on in-transit visibility was published in 1997. In that year, DoD directed the development of processes, standard operating procedures, and an "automated common user system that provides visibility of supply chain custody movement that increases efficiency in accountability."[11] Over the next two years, many proposals were presented to fix the problem. It was not until 1999, when GeoDecisions, a government contract company, developed the system called Intelligent Road/Rail Information System (IRRIS), that a solution began to appear. The system contained all the requirements for DoD use but was not fielded to the military. Colonel David J. Kolleda argues that if anyone needed ITV, it was the military with all its moving

[11]Anthony Stoneking, "Department of Defense's Use of RFID Technology for In-Transit Visiblity, Asset Visibility, and Its Return on Investment" (A Graduate Degree Proposal Submitted for INSS 6990, Bowie State University, Maryland in Europe, July 2006), 5.

parts. He states in his 2005 War College Research Project, "Achieving In-Transit Visibility (ITV): A Study of Technology on ITV in the Department of Defense," that the "Department of Defense (DoD) failed to establish feasible ITV polic[ies], even after the benefits were experienced as a result of supply chain management and distribution failures" during previous military operations.[12] He supports his point by reporting that the military "suffered a discrepancy of $1.2 billion in material shipped versus material acknowledged as received because of old procedures and systems" during Operation Iraqi Freedom.[13] He maintains that this lack of visibility could have been avoided if the military fielded some type of ITV system. It would take just a few years before the military received its first ITV system. The fielding of the Transportation Coordinator's Automated Information for Movement System (TC-AIMS) provided the military with the ability to gain visibility of commodities thereby increasing the effectiveness and efficiency of supply management.

Summary

Natural disasters will continue to occur within the United States. Unlike the citizens of New Hampshire in 1635, who had no early warning and therefore could not prepare for the hurricane, with today's technology, such early warning and visibility exists. As the lead federal agency, FEMA is responsible for leading the US efforts in preparation and mitigation of natural incidents. In addition, when called upon to mobilize

[12]David, Kolleda, "Achieving In-Transit Visibility (ITV) A Study of Technology in the Department of Defense" (Research Report, U.S. Army War College, Carlisle Barracks, March 2005), 2.

[13]Ibid., 6.

in support of FEMA, NORTHCOM is prepared and ready to assist. When working together in a joint interagency environment, the ability to share information and gain a common operating picture improves the efficiency and effectiveness of operations. More specifically, in the joint logistic environment (JLE), a clear understanding of supply management will aid in the rapid distribution of supplies. This common operating picture and visibility are crucial for response to a natural disaster. The next chapter will examine critical government documents from FEMA headquarters and the Inspector General (IG) office. It will also review military doctrine and standing operating pictures. Finally, it will highlight comments from personnel assigned to key agencies and what they have to say about ITV of material as it moves through the supply pipeline during disaster relief operations.

CHAPTER 2

LITERATURE REVIEW

Because of the frequency and devastation of natural disasters, plenty of books, articles, government documents and military doctrine are published on the subject. This chapter will examine some of those documents and later in chapter 4, analyze their importance and relevance to providing a potential solution to the research question. The literature presented is divided into four major categories. The first category encompasses official federal government department documents. The second category consists of military doctrine and standing operating procedures (SOPs). There are several books on natural disasters but only one was used in this research because of its relevance to the specific research topic and the opportunity to conduct a one-on-one interview with the author. Category three is a book written by a well-known military officer who serves as a subject matter expert on disaster relief operations. The final category of literature comes from articles on the internet and interviews or dialogue with FEMA, NORTHCOM planners and other agencies' staff officers. The data within each group is organized in chronological order to demonstrate ITV progress over the past eighteen years.

Category 1–Federal Government Documents

The most recent report addressing FEMA's logistics management practices comes from Harvey E. Johnson Jr., Acting Deputy Administrator and Chief of Operations for FEMA. The report is a transcript before the Committee on Homeland Security Subcommittee on Emergency Communications, Preparedness and Response, U.S. House of Representative on 9 April 2008. The title of the document is, "Moving Beyond the

First Five Years: Ensuring FEMA's Ability to Respond and Recover in the Wake of a National Catastrophe." Johnson addresses actions FEMA is taking to correct some of the internal challenges identified within the FEMA organization. He addresses how the "New FEMA" is much better prepared to handle national disasters. This new, proactive transformation stems from the Post-Katrina Emergency Management Reform Act (PKEMRA) and other mandated legislation and investigations.[14]

The improvements identified by Johnson are cited in FEMA's Strategic Plan. This plan outlines national steps to better synchronize Regional efforts throughout the United States. The plan covers and concentrates on seven major areas. The area that is applicable to this research is initiative # 3, Improving Management of Logistics. Johnson states that "[d]elivering the right material, to the right place, at the right time is one the most critical missions FEMA coordinates and performs."[15] In order to combat some of its logistical challenges, FEMA redesigned the LMD with the intent to model "Department of Defense strategic level logistics organizations" to be more proactive, [and] responsive to regional headquarters [in order] to improve the coordination and execution during a natural disaster.[16] Three other notable initiatives are: (1) the development of the Total Asset Visibility system to track supplies, (2) the establishment of an interagency agreement with Defense Logistics Agency for ready meals and water for single point ordering and

[14]U.S. House, Subcommittee on Emergency, Communication, Preparedness, and Response, "Moving Beyond the First Five Years: Ensuring FEMA's Ability to Responde and Recover in the Wake of a National Catastrophe" (Washington, DC, 2008), 2

[15]Ibid., 7.

[16]Ibid.

(3) regional's vehicle fleet management.[17] These corrective contributions have incrementally improved FEMAs responsiveness and their effectiveness.

Another current document on FEMA's logistics management processes is written by the Department of Homeland Security Office of the Inspector General (IG). In May 2008, the IG conducted an audit of FEMAs logistics management systems and practices. The title of the report, "Logistics Information Systems Need to Be Strengthened at the Federal Emergency Management Agency" is a scathing detailed analysis of how FEMA tracks, accounts, and distributes supplies. To produce the report, the IG conducted personal interviews with warehouse employees and FEMA staff officials. The IG also conducted on-site observations and reviewed accounting documents to support the results in its report. The overarching theme throughout the report is that "FEMAs existing information technology systems do not support logistics activities effectively" and that the LMD needs to finalize its "strategic and operational plans to guide logistics activities" to be more efficient and effective.[18]

Up front, the report addresses an earlier report dated in September 2005. The report identified to FEMA that its organization needed "to improve [its] resource tracking system with real-time capabilities."[19] The report also highlights that in March 2006, the IG told FEMA that its organization "lacked standard operating procedures in resource ordering, had an inefficient and ineffective system for tracking requests, and the same

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[17]Ibid.

[18]Department of Homeland Security, *A Performance Review of FEMA's Disaster Management Activities in Response to Hurricane Katrina*, 1.

[19]Ibid., 5.

information was entered into a least three tracking systems that were not linked."[20] Finally, the report concluded with recommendations and final comments from the FEMA LMD concurring with the findings.

In November 2009, the Department of Homeland Security (DHS) released it overall performance "report card." The report, *Department of Homeland Security Annual Performance Report Fiscal Years 2008–2010* is a great internal self-evaluation litmus test of the organization's performance since 2008 and provides guidance and direction for FY2009 and FY2010 on how to be more effective. In the report it lays out the DHS mission statement and five overarching goals. Under each goal, there is a list of several critical objectives that enables the goals success. The goals and objectives have rating percentages, illustrated by shapes, to determine DHS effectiveness since 2008. Explanation and corrective actions are provided for those goals and objectives that did not meet the fiscal year target. In the report, there are several sub-objectives from multiple goals that are significant to this research. The two goals that are of significance to this study are goal number four (4), Strengthen Our Nation's Preparedness and Emergency Response Capabilities and goal number five (5) Strengthen and Unify DHS Operations and Management. These goals focuses on developing infrastructure, standing operating procedures and doctrine to better collaborate and communicate during an incident.

[20]Ibid.

Category 2–Military Doctrine and Standing Operating Procedures

Interagency coordination and execution during natural disasters is a necessity and is more common since Hurricane Katrina in 2005. With FEMA and NORTHCOM working side by side during national incidents, joint interagency doctrine serves as a basic framework to synchronize efforts to accomplish the missions. Joint Publication 3-0, *Joint Operations*, and Joint Publication 4-0, *Joint Logistics*, are strategic documents that lay out basic functions and guidance to establish a common operating picture for joint military-interagency logistics planning operations. At the Army operational and tactical levels, Field Manual (FM) 4-0, *Sustainment*, provides key tasks to gain visibility of commodities during any type of Army operation.

The joint manuals on operations and logistics are keystone documents that describe fundamental planning considerations and requirements to synchronize joint interagency operations. The manuals state that the key to success is establishing a unified action under one unified command. Unified action is the "synchronization, coordination and/or integration of the activities of governmental and nongovernmental entities with military operations to achieve unity of effort."[21] Another key factor in joint and interagency operations is the ability for all players to see, in almost real time, the same information to take appropriate actions. These two bedrock fundamentals are paramount to extend operational reach and to sustain an operation over time.

The *Joint Logistics* publication accentuates the importance of joint logistics environment-wide (JLE-wide) visibility. This environment allows for the access of

[21]Joint Forces Command, United States, Joint Publication (JP) 3-0, *Joint Operations* (Suffolk, VA: Joint Warfighting Center, 2006), II-3.

logistics processes and resources to answer questions like “Where is it” “How will it get there? and “When will it get there?”[22] The manual also provides several logistic planning factors to consider when planning for joint and interagency operations. Some of these factors are identifying, allocating and tracking requirements. Once the requirements are identified, the next step is to place capabilities toward them. Throughout the planning and execution process, the continuous verification of commodities reaching their final destination is crucial. Interagency collaboration aids in confirming the constant movement of the commodities as they move through the supply chain and in closure reports from the end user. The detail tracking is best monitored through an in-transit visibility system.

The ability to track commodities is essential to sustaining an operation. In order to achieve this visibility, players must have the right architecture in place in order to gain visibility of the distribution of assets. FM 4-0, *Sustainment*, Chapter 4, *Integrating Sustainment into Operations*, discusses the importance of identifying requirements and systems available to account for and distribute commodities during an operation. The method to track personnel and commodities during an operation is called in-transit visibility (ITV). ITV is the “ability to track the identity, status, and the location of DOD units, and non-unit cargo . . . from origin . . . destination across the range of military operations.”[23] Essential data on the cargo is entered into an accountability automated system. Once the data is entered, the “information [must be] accessible to all users

[22]Joint Forces Command, United States, Joint Publication (JP) 4-0, *Joint Logistics* (Suffolk, VA: Joint Warfighting Center, 2008), I-8.

[23]Department of the Army, Field Manual (FM) 4-0, *Sustainment* (Washington, DC: Government Printing Office, 2009), 4-17.

regardless of the military service or echelon of command."[24] The ability to gain visibility as commodities move through the supply pipeline to the end user allows logistics managers to collaborate and be more responsive during an operation.

Northern Command, located in Colorado Springs, Colorado is the Unified Combatant Command for the United States and is the key military player during natural disaster operations. Faced with historical challenges of determining what commodities are distributed to a natural disaster, NORTHCOM has published a contingency plan to help mitigate these obstacles. The document, published on 31 December 2008, is titled HQ NORAD-USNORTH *In-Transit Visibility (ITV) Concept of the Operations (CONOPS).*

The purpose of the CONOPS is to "improve contingency planning and response efforts . . . by standardizing ITV processes and procedures. . . . These processes will contribute to form a common operating picture (COP) that allows key leaders to assert better command and control . . . and increase effectiveness."[25] The contingency plan directs that all forces and DoD agencies operating within NORTHCOM's geographic area implement the outlined ITV procedures within the CONOPS.

The CONOPS does a great job laying out the rules of engagement to enforce the tracking of cargo during a contingency. The plan defines critical key tasks the Command will perform and certain tasks that each player operating within its area of responsibility will also complete. The first task is that NORTHCOM will mandate that the Global

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[24]Ibid.

[25]NORAD-USNORTHCOM, J4, *In-Transit Visibility (ITV) Concept of Operations (CONOPS)* (Colorado Springs: United States Army, 2008), 3.

Transportation Network (GTN) be the single source DoD ITV system.[26] Secondly, NORTHCOM will be more proactive and coordinate with all DoD inter-agencies to gain access to their end-to-end ITV data. Lastly, NORTHCOM will identify and report deficiencies in automatic identification technology (AIT) logistic support systems. If executed as directed, this CONOP will definitely provide a common operating picture to better gain visibility of commodities during a natural disaster. Published military doctrine on joint-interagency operations and CONOPS by combatant command headquarters describes the foundation and framework needed to establish a baseline common operating picture during a natural disaster environment.

Category 3–Book

There are quite a few published books, like *The Edge of Disaster* by Stephen Flynn and *Disaster Response and Homeland Security What Works, What Doesn't* by James F. Miskel, that concentrate on the challenges of dealing with natural disasters. Yet, the one book used in this research is *Survival: How a Culture of Preparedness Can Save You and Your Family from Disaster*. The book is a personal memoir from Lieutenant General Russell L. Honoré when he was Joint Task Force-Katrina Commander in 2005. The book eloquently addresses the challenges of the task force. Some of these challenges included command and control responsibilities and the lack of federal government's involvement and policymaking. Appendix 2, Joint Task Force- Katrina Hurricane Assessment Ten Quick Wins, addresses major issues that need resolution before the next national disaster. The two points that need quick and immediate solutions are: (1) the

[26]Ibid., 4.

need for a national communication system that allow all players the ability to communicate; and (2) the need for the federal government to establish transparent plans that are filtered down to the local government in order to establish a baseline common operating picture. Even though this category only addresses one particular book, the internet is filled with articles from magazines and information papers on ITV. The next category was useful in gathering technical infrastructure information on ITV, personal perspective of ITV and historical references on what has already been written on ITV.

Category 4–Internet Sites and Interviews

In 2005, a journalist, Laurie Sullivan, wrote an online editorial called "FEMA's Foul-up" in the *InformationWeek* periodical. She contends that FEMA's information technology (IT) systems were overloaded and "hindered disaster-recovery efforts, delayed emergency supply shipment, and put emergency-response personnel at risk."[27] More specifically, she states that the problem was that FEMA's Logistics Information Management System (LIMS III) was "incapable of tracking essential commodities such as ice, water, and tents" during the hurricane season.[28] Sullivan's investigation revealed that LIMS-III "is not integrated or interoperable with other FEMAs systems and does not have the ability to share information across its agencies."[29] The article claims that emergency response personnel were using spreadsheets to track commodities and calling

[27]Laurie Sullivan, "FEMA's Foul-Up," *InformationWeek*, 3 October 2005, http://www.informationweek.com/news/global-cio/showArticle.jhtml ?articleID=171202349 (accessed 22 September 2009).

[28]Ibid.

[29]Ibid.

up trucking companies to get updated information on the location of shipments. The manual process of entering data by responders could have been alleviated by an in-transit visibility system.

The headlines in the November 2007 Military Surface Deployment & Distribution Command *News Release* reads, "SDDC partners with, provides IRRIS technology to FEMA." The report explains how SDDC has used the system for some time to track the shipment and movement of the military personnel and cargo. It further explains that IRRIS feeds into over "400 data-sets– including data on roads, bridges . . . along with near-real-time information on weather, traffic, and vehicle location."[30] One of the applications within IRRIS has an ITV function. This pre-existing DoD system appears to be exactly what FEMA needed and therefore, FEMA, entered into an agreement with SDDC to use the IRRIS program. This contractual agreement demonstrates that FEMA now has a workable system to gain visibility of supplies during an incident.

The *Army Sustainment* (previously *Army Logistician*) magazine publishes important articles that impact military operations. The articles range from lessons learned to information papers on specific logistics subjects. Within the magazine website, there were 365 related topics on in-transit visibility. Some of the topic articles range from, "Fifty-Two Things You Might Want to Know About In-Transit Visibility," "Challenges of Total Asset Visibility," to "Joint Asset Visibility: Why So Hard?" All of the articles had some bearing on the research paper, but two of them, "Joint Asset Visibility: Why So

[30]Military Surface Deployment and Distribution Command, "SDDC Partners with, Provides IRRIS Technology to FEMA," News Release, 29 Novemember 2007: 1.

Hard?" and "Where Is My Stuff?" were used for this research because they were the most directly related to protocol and doctrine on ITV.

In the July- August 2007 edition of the *Army Logistician* magazine, Lieutenant Colonel James C. Bates wrote the article "Joint Asset Visibility? Why So Hard?" The logistics perspective of the articles is that from the DoD level. Bates states that "attaining asset visibility is incredibly difficult" because it requires the efforts of the entire DoD community to corroborate.[31] He reiterates that some of the challenges with total asset visibility are lack of "data standardization" and "obtaining, managing, and sharing the related information."[32] The issues he brings forth put doubt and ambiguity in the supply management system.

Thomas Monzagol and Eleni Brown wrote an attention-grabbing article titled, "Where's My Stuff?" The article's title is a play on words to reiterate the common question asked to logisticians or supply managers on cargo location. The article is a simple reinforcement that having in-transit visibility systems with accurate data places confidence in the supply mangers' ability to respond truthfully about cargo disposition and location.

Interviews

To validate if FEMA was using the IRRIS system, the researcher conducted a telephonic interview with Mr. John Reaves, a 5th Army G/J-7 Logistics Analyst on 15 September 2009. The purpose of the interview was to find out what system they used

[31]James C. Bates, "Joint Asset Visibility: Why So Hard?" *Army Logistician* 39, no. 4 (July-August 2007): 1

[32]Ibid., 2.

during a natural disaster. Reeves stated he rarely used IRRIS because the system does not provide all the capabilities he needs to plan for and respond to a natural disaster.[33] He further said that the primary means of sharing commodity information between the different agencies is by emailing a data spreadsheet to the different agencies. This information was later confirmed with a site visit to FEMAs Region VII Headquarters in Kansas City, Missouri and a phone call to one of its logistic planners. The researcher asked, "What system do you use to manage commodity movement?" The FEMA planner stated that there are several systems used by FEMA but the most frequent method of sharing commodity status was through spreadsheets emailed to the different agencies. FEMAs method of accounting for and tracking supplies remains a huge problem for NORTHCOM J4 planners. Email traffic with a NORTHCOM J4 staff officer reveals that the military needs to gain permission from FEMA to access the IRRIS program. The restriction placed by FEMA on NORTHCOM compounds NORTHCOM's ability to track and account for commodities.

Recent correspondence with key decision makers people who could truly make an impact on the research topic divulged that many had great concerns on ITV interoperability shortfalls and the lack of procedural guidance. The email correspondence was initiated by the researcher to gather the most current logistics challenges during Operation Unified Response. What followed was a wave of replies with great insight on the historical trend. The reason why the data was consistent was because many admitted that ITV continues to challenge operations and probably will in the next operation. The

[33]John Reaves, 5th Army G/J-7 Logistics Analyst, Telephonic interview by author, 15 September 2009.

consensus I pulled from the email transcript was that the ITV problem is too large to come up with a feasible solution because of the many different agencies personal interests involved and the lack of unity of effort involved.

Summary

Since 2005 numerous books, articles, and doctrine address the need and importance of gaining visibility of commodities during natural disaster relief operations. These documents were presumably produced and published from lessons learned from the amount of devastation left by natural disasters. The internal investigations conducted by the Government Accounting Agency continue to reiterate challenges within FEMA's supply chain management systems. Published books and doctrine acknowledge the challenges associated with interagency collaboration and address solutions to mitigate future shortfalls. Yet, the recent interviews confirm that even though the problems are identified and systems were developed to answer the problem, some players resort back to old methods to account for commodities. The variety of data presented reinforces two key points. The first is that FEMA and NORTHCOM acknowledge the shortfalls of not having a compatible ITV system in order to share information during an operation. Second, this trend needs resolution to ensure rapid and precise distribution of supplies.

The next chapter will explain the two different research methodologies used during the study. The two different approaches helped the researcher to reinforce certain findings. These findings continued to surface during the study process. Unlike the cyclic challenges of ITV that continue to percolate, the obvious repetitive findings made it easy for the researcher to propose feasible recommendations.

CHAPTER 3

RESEARCH METHODOLOGY

> My logisticians are a humorless lot . . . they know if my campaign fails, they are the first ones I will slay.
>
> — Alexander the Great

This chapter outlines the methodology used to answer the primary question and subsequent questions. The researcher used two approaches during the study. The first approach was primary research in the form of personal interviews, phone conversations and email correspondences with key players in FEMA, NORTHCOM, and SOUTHCOM. The next approach was secondary research in the form of a qualitative narrative analysis of the four different literature categories. This second approach was divided into two sections. The first was a question and answer methodology to the secondary questions. The second was a standard narrative analysis. The combined approaches build upon each other and helped to frame the overall problem with ITV. The approaches also highlighted emergent patterns that assisted in providing potential recommendations to the research topic, "Is there a need for a national in-transit visibility system to help in establishing a common operating picture, information sharing, synchronization, and timely distribution of supplies during natural disaster relief operations?"

Primary Research Method: Interviews, Phone Conversations and Emails

The researcher spent extensive time conducting email correspondence, phone conversations and interviews with key personnel to try to get firsthand data on the

research topic. The researcher began her initial question to determine the depth of the problem by contacting the NORTHCOM J4 staff. A field grade officer, J4 planner, provided the researcher with a litany of leads on where to find information. More importantly, the officer spoke very candidly about (1) the systemic challenge of getting all players on the "same sheet of music," (2) how difficult it is to implement their proposed ITV concept of operations plan, and (3) that if the problem is not addressed, it will continue to be a problem during the next national incident. Next, a rare one-on-one interview with Lieutenant General (Retired) Honoré provided the researcher with a commander's perspective of the challenges of working in an interagency environment that does not share a common communication infrastructure. Personally speaking to FEMA personnel helped to validate what systems were used during national incidents. An email chain from several critical organizations holding key positions were included in the "reply to all" chain. Some of the organizations included Project Manager Joint-Automatic Identification Technology (PM-J-AIT), United States Transportation Command (USTRANSCOM), Forces Command (FORSCOM) and USSOUTHCOM. This email traffic provided the researcher with critical data input on the procedural challenges, the lack of command emphasis on ITV, and the need for more coordination to resolve the problem. The emails back and forth were very straightforward, direct, and added more significance to the research. Even though the primary research method provided the most concentrated evidence for the research, a look at what was written on the research topic still needed to be addressed to solidify the researcher's proposed recommendations.

Secondary Research Method: Question and Answer Methodology

Up front in the analysis, the subsequent questions are readdressed and answered to help set the stage to highlight the problem statement and build on possible recommendations. The follow-on questions needed to have relevance, significance, and linkage to the problem statement and to the main research topic. There were five additional questions addressed in the research. These questions ranged from policy to ITV applications. The first question, "what redundant ITV lessons learned continue to surface during hurricane relief operations?", was chosen to establish trends during hurricane operations. Selecting Hurricane Andrew, which was the first large scale military support to civil authorities, helped set the benchmark on how well hurricane relief operations were executed. Hurricane Katrina was chosen as a litmus test to find out if the previous trends identified during Hurricane Andrew were corrected. Operation Unified Response provided the latest barometer to determine if 18 years of recurring trends on ITV were resolved. The question, "what national policy governs the establishment of interoperable communication systems?", helped to pinpoint the lead proponent that is responsible for the current policy and also which governing agency would have to implement change. "What DoD national ITV system is in place?", served as a metric to determine, during the phone interviews, if the interviewees were using the named DoD system. The fourth question, "does DoD have the capability to support a national ITV system?", helped to determine if the viable recommendation of a national system was even feasible. The last question, "what ITV systems are used by each player?", helped to frame the interoperability gap and highlighted the AIS challenge in finding a possible national ITV system of record. This approach provided tidbits of

important data from a broad overview. A more detailed interpretation of various literature sources provided clarity of the problem and aided in deducting logical suggestions.

Secondary Research Method: Qualitative Narrative Analysis

The literature narrative analysis technique focused on addressing recurring emergent data that bears on the research questions. The specific documents from each category were carefully selected based on what the key proponent or organization had said about ITV. The documents also relayed the overall theme of the category. Organizations like the Government Accountability Office (GAO) and IG provided an unbiased evaluation. Reports generated out of FEMA headquarters strengthened the importance of the research because the organization acknowledged that it had internal logistics accountability challenges. Even though all the literature presented contributed to the research, there were a few selected based on their message and impact on implementing a national ITV system.

In Category 1, Federal Government Documents, the *Department of Homeland Security Annual Performance Report Fiscal Year 2008,* was selected for two reasons. The first was that the report is an unbiased review of how well the lead organization is doing to accomplish all of its goals and objectives. Secondly, it provided financial data to demonstrate how much money is being placed toward the test, evaluation, and the standardization of ITV systems. In Category 2, Military Doctrine and Standing Operating Procedures, two sources were chosen. The first were the joint and interagency doctrine manuals. Joint Publication (JP) 3-0, *Joint Operations* and Joint Publication (JP) 4-0, *Joint Logistics* paid dividends to the research. These two documents highlighted the

importance of working in an interagency environment and the importance of striving for unity of effort. The *Joint Logistics* publication outlined critical strategic planning factors that, if not considered, planned and executed, could hinder timely response efforts. The second document in category 2 was NORTHCOM's *In-Transit Visibility (ITV) Concept of the Operations (CONOPS).* This plan explains the many different systems used by each player for ITV, the challenges of gaining access to different players systems, and finally, proposes a recommendation with detailed guidance and what ITV system should be used during natural disasters. The book in category three, *Survival: How a Culture of Preparedness Can Save You and Your Family from Disaster*, highlighted the challenges of gaining unity of effort because of the lack of an interoperable communications system. Lastly, the article from the Military Surface Deployment & Distribution Command News Release, "SDDC partners with, provides IRRIS technology to FEMA," was chosen and analyzed for two reasons. First, it illustrated that FEMA was being proactive in trying to solve the habitual ITV problems. And secondly, that FEMA had procured a very powerful ITV system that they could mandate to be the national system of record. The selection of literature from different mediums was enough to produce an unbiased analysis and recommend a reasonable solution.

Research Planned But Not Executed

The researcher planned to conduct a survey with at least one person from all of FEMA's ten regional headquarters. The questions were drafted and ready for distribution. The proposed questions are in Appendix A. The researcher did not send out the surveys because after speaking to some of the offices, the researcher believed the questions would not be answered honestly because of the lack of confidence that the surveyors' identity

would be exposed. However, there were several phone conversations with influential personnel who acknowledged the challenges of gaining a COP on ITV. Some admitted that a thorough research of ITV challenges needed to be done and that they hope the outcome will produce change for the good of everyone involved.

Summary

The researcher conducted primary and secondary research. The primary research consisted of first-hand interviews, phone conversations, email correspondence and site visits to and with powerful personnel who influenced this study. The secondary research approach was a qualitative narrative analysis. With the different types and volume of literature available on the topic, the ones selected for this research sampled the full range of technical information and perspectives on the research topic. By conducting two methodologies, it allowed the study to be more credible given the time constraint to complete this research.

CHAPTER 4

ANALYSIS

> Forget logistics, you lose.
>
> — LTG Fredrick Franks, 7th Corps Commander, Desert Storm

This chapter has two parts. The first part of this chapter highlights key points noted during interviews, phone conversations, and email correspondences with key personnel. The second part of this chapter readdresses the research secondary questions and provides answers to them based on the pool of literature from chapter 2. Following the answers to the secondary research questions, there is a narrative qualitative analysis of a few significant documents. The two types of research, primary and secondary, help to support the framework in chapter 5 with proposed recommendations.

Primary Research Analysis

In September 2009, the researcher contacted USNORTHCOM, who originally proposed the research topic, to verify if the topic was still valid. The researcher initiated an email to a J4 planner to find out the depth of the problem with ITV. The planner, a field grade officer, expressed concerns that as the military lead agent for national incidents, it is difficult for the organization to track FEMA's shipment because of the lack of "permissions" given to them to gain visibility in IRRIS. NORTHCOM's inability to access what FEMA is contributing to the effort hinders interagency unity of effort and the ability for the two key players to collaborate on supply management activities. Next, in September 2009, the researcher conducted a phone interview with a U.S. Army-North (5th Army) G/J-7 Logistics Analyst. The purpose of the call was to validate which system

the organization was using during national incidents. The planner articulated that he uses IRRIS but that it was not necessarily "user friendly" or applicable for national incidents. The planner recommended that a national ITV system should be web-based, have different screens for each of the Emergency Support Functions (ESF), have template forms so that users just input their data into the program and finally, there should be an application that allows the data to be exported into a spreadsheet for analysis.[34]

The researcher took advantage of a rare opportunity to interview Lieutenant General (LTG) Honoré during his visit to Fort Leavenworth, Kansas in 2009. LTG Honoré was giving a presentation on lessons learned from Hurricane Katrina, but more specifically, reinforcing the need for local and federal mitigation plans and citizen self-preparedness within the United States. During the brief dialogue it was portrayed that his military joint task force did not experience huge challenges with supply management. This remark supports the researcher's analysis that the military has ITV systems in place that are extremely effective during catastrophic and therefore these systems should be considered as the national ITV system.

With the large number of organizations contributing to Haiti's earthquake relief operations, the researcher contacted the lead military service agent, SOUTHCOM, and asked if the organization faced any ITV challenges. One simple email branched into an email chain that included very powerful and influential organizations. From these organizations the following critical data emerged: (1) the radio frequency- ITV server infrastructure already exists within the United States, (2) "the objective of a common ITV systems is already in process, but not a completely coordinated effort," (3) in-transit

[34]Ibid.

visibility of shipment is not integrated into the planning process, nor is it part of the Commander's Critical Information Requirement (CCIR), and finally, cargo documentation and ITV proved extremely difficult due to inaccurate data entries and "last minute" changes. The personal interviews and email traffic to key personnel in very influential and critical organizations set the foundation of the research. Most of the data from the primary research covered the challenges with the infrastructure and processes within an operation. To add more depth and validity to the research before making proposed recommendations, the secondary questions need to be addressed and an analysis of certain literature in chapter 2 needs highlighting.

Answers to Secondary Research Questions

The secondary research questions presented earlier were: "What redundant ITV lessons learned continue to surface during hurricane relief operations?" "What national policy governs the establishment of interoperable communication systems? What Department of Defense (DoD) national ITV system is in place?" "Does DoD have the capability to support a national ITV system?" "What ITV systems are used by the two players involved in disaster relief operations?" The answer to these questions follows.

What Redundant ITV Lessons Learned Surfaced During Two Major Hurricanes?

There were many logistical challenges during Hurricane Andrew and Hurricane Katrina. The two continuous trends that emerged from both hurricanes were, one, there was a lack of accountability and visibility of supplies; and two, that an ITV system would have mitigated these sustainment problems. These comments continue to surface during natural disasters operations.

On 24 August 1992, Hurricane Andrew pounded the southern part of Florida. The DoD tasked the U.S. Army Materiel Command (AMC) to provide humanitarian support for the operation. This was the first large scale deployment of a Joint Task Force in support of hurricane response operations. The following two key points from Major General (MG) Thomas B. Arwood, Deputy Chief of Staff for Logistic AMC, *After Action Report/Lessons Learned from Hurricane Andrew* was addressed to Headquarters Department of the Army on 2 December 1992. His first point was that accurate recordkeeping of supplies was difficult because "no existing standard system [was] in place to handle the transactions" and therefore manual procedures were used to account for supplies.[35] MG Arwood's second observation was that there was no single DoD standard system to control supply operations. The report recommended that the lead agency, DoD, "develop a software program to accommodate this need . . . [and] [i]t should be PC based, real time and self sustaining with communication links."[36] It appeared that DoD's recommendations were not implemented because thirteen years later, the United States would face its worst disaster and again, the lack of ITV hindered response operations.

On 29 August 2005, Hurricane Katrina devastated the state of Louisiana. Recorded as the worst storm in US history, the lessons learned from this incident altered the mission sets and duties of many military and DoD agencies. The ITV challenges reported from Hurricane Andrew are again highlighted in after action reports from

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[35]Thomas B. Arwood, *After Action Report/Lesson Learned from Hurricane Andrew* (Alexandria, VA: Department of the Army, 1992), E-3.

[36]Ibid., D Section.

Hurricane Katrina. On 8 March 2005, the GAO stated, "logistic systems were often totally overwhelmed . . . and the result was that critical resources were not available, properly distributed, or provided in a timely manner."[37] The second observation came from the Office of the Inspector General. It stated that in 2004, FEMA's LMD received funding for an asset visibility system. Yet, FEMA never fully incorporated the system into its procedures and therefore FEMA was "unable to determine whether a truck had been offloaded or had changed cargo once it left its point of origin."[38] Again, the lack of visibility delayed the overall responsiveness and efficiency of supply management.

Even though the information is outside the geographic boundaries and limitations of this research, it is important to highlight logistics points from Operation Unified Response-Haiti earthquake relief efforts. On 12 February 2010, the operation became relevant to this research because FEMA provided technical support to the disaster and the U.S. Central Command served as the lead service support agency. The after action reports compiled from the operation are relevant to the research and contribute to the chronic ITV trends addressed in the two previous hurricanes. A VTC with USSOUTHCOM Joint Staff in April 2010 confirms the ITV is still a challenge during national incidents. The J4 mentioned that ITV was a challenge during the operation because the lack of procedural, systematic and automated procedures. These problems stemmed from the large number of different agencies involved with the operations and all of them using their own ITV system. The J4 will follow up these challenges with a report on how to mitigate future

[37]Government Accountability Office, GAO 06-442T, *Hurricane Katrina: GAO's Preliminary Observations Regarding Preparedness, Response, and Recovery* (Washington, DC: Government Accountability Office, 2006), 17.

[38]Ibid., 69.

problems. At the time of this research, the document had not been released. These historical trends continue to plague national incidents. Answering the subsequent research questions will shed some light on the problem.

What National Policy Governs the Establishment of Interoperable Communication Systems?

The NIMS is DoD's core document or doctrine that governs the establishment of interoperable communication systems during a national incident. The NIMS Fact Sheet states that NIMS is the "essential principle for a common operating picture and interoperability of communications and information management" and the enforcer for the "standardized resource management procedures for coordination among different jurisdictions and organizations."[39] The FY2009 NIMS Compliance Objectives outline 28 tasks to help synchronize tribes, territories and states to better prepare and react to national incidents. Under the component, Communication and Information Management, objective 28, "[u]tilize systems, tools, and processes to present consistent and accurate information (e.g., common operating picture) during an incident/planned event," and it directs all tribal through local and up to states governing officials to comply by calendar year 2007.[40] Having data that displays who is and who is not in compliance would have added creditability to the research. But the data is sensitive and accessible by key personnel only. The analysis revealed that the wording in the NIMS document may be the source of why players cannot gain a common operating picture during a natural disaster.

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[39]Department of Homeland Security, "FEMA, NIMS Resource Center," http://www.fema.gov/emergency/nims/ (accessed 10 September 2009).

[40]Ibid.

The document gives all players from tribal to state levels vague and liberal guidance on what the criteria or specification is to be for the COP system. The lenient and nebulous objective allows each governing federation from tribal up to state levels to purchase or develop their own COP system. Once these systems are purchased and operating, they are in compliance as far as the NIMS objective is concerned. The fundamental problem is that NIMS does not specifically direct players to ensure that their COP system has ITV capability and is interoperable with current FEMA and NORTHCOM systems. This leads into additional questions on what systems are available at the strategic level.

What Department of Defense National ITV System is in Place?

DoD has several ITV systems to track supplies; however, there is no document or policy that directs all players to use a specific system during national incidents. A review of their current supply accountability management systems from GAO and IG confirms that their systems are unproductive.

Does DoD have the Capability to Support a National ITV System?

There are reports in this research that indicate that DoD does not have the resources or capability to support a national system. This finding implies that FEMA does not have the appropriate IT systems to bridge the many independent systems. Several IG reports and after action reports stress that FEMA needs to improve its ITV capability and to establish SOPs to better account and track supplies during hurricane response operations.

What ITV Systems Are Used by each Player?

In order to comprehend the magnitude faced by FEMA and NORTHCOM in gaining a common operating picture of supplies during a disaster relief, a look at all the different in-transit visibility systems might help illustrate the dilemma. One crucial dilemma that will become clear is the problem of different ITV tracking systems used by each player.

Information Technology Systems Used by FEMA for ITV

FEMA uses several systems to account for supplies located in its eight distribution centers and one Emergency Housing Distribution and Logistics Center located within the United States. Even though, on the record, there are several systems identified, not all distribution centers are equipped with a system to issue, store and track supplies. Some centers are using "alternate methods, such as ad hoc IT systems and paper forms."[41] Another point is that each distribution center works independently and some "lacked standard operating procedures in resource ordering, had inefficient and ineffective systems for tracking requests. In some cases the same information was entered into at least three tracking systems that were not linked."[42] A list of the different tracking systems used by FEMA is below:

eTasker is a web-based system that field personnel use to submit requests for property and commodities to the LMD of FEMA.

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[41]Department of Homeland Security. Office of Inspector General. OIG-08-60, *Logistics Information Systems Need to BeStrengthened at the Federal Emergency Management Agency* (Washington, DC: Government Printing Office, 2008), 7.

[42]Ibid., 5.

Intelligent Road/Rail Information System (IRRIS) is an internet-based mapping application that allows users to view the location of in-transit trailers equipped with GPS devices from the time they leave distribution centers until arrival at final destination. IRRIS pulls shipment data from TPM and location tracking through OrbiTRAX.

OrbiTRAX provides the location information for global positions systems transponders that are attached to FEMA trailers or certain FEMA items, such as generators.

Total Asset Visibility (TAV) is a colony of different IT systems grouped together under the theory that the data from all the different systems will seamlessly feed into logistics support accounting programs.

Trading Partner Management (TPM) facilitates and tracks the movement of property and commodities from the time they are ordered through fulfillment and shipping. The system manages orders from all regions.

Information Technology Used by the Military for ITV

The military has three primary ITV systems to track commodity movement. Military policies and procedures direct the mandatory use of these systems. To capture data from each of these systems, it developed a standalone system called the Global Command and Communication System (GCCS) to bridge the information technology gap from the various systems. One valuable attribute of the military systems is the majority of them are web-based, which allows any user, with the right equipment, to gain access. Many of these systems exist in the classified and unclassified forms. As the lead service agent for disaster relief, NORTHCOM would like all players operating within their geographical area of responsibility to use GTN or IRRIS as the system of record for

ITV.[43] Like the accessibility challenges confronted by FEMA, not all military units, specifically the National Guard and Reserve units, have access to these systems.

Below are a list of ITV systems used by the military, more specifically, NORTHCOM, to track commodities. Unlike FEMA, the many different ITV systems used by the military are interoperable and pull data from each other.

GTN is an integrated database system that provides users with real-time in-transit visibility information, and command and control capabilities to facilitate transportation planning and decision making during all types of operations.

Movement Tracking System is a satellite tracking system used at the tactical level to provide operational mangers with a near-real time view of the location and status of shipment. The information in MTS is fed into TC-AIMS.

Single Mobility System (SMS) is a web-based application that provides visibility of air and sea transportation assets and provides aggregated reporting of cargo and passenger movement. SMS is able to produce reports by pulling data from several sources like GTN and IRRIS.

Summary

The previous pages introduced the several different ITV systems used by FEMA and the military, specifically NORTHCOM. The many distinct systems beg the question: "can an AIS bridge the interoperability gap between the different systems?" Or, is it easier to say that: (1) there are too many different systems and (2) that DoD needs to determine which ITV system is the system of record, and (3) direct all players to use that

[43]NORAD-USNORTHCOM, x.

system during hurricane response. A more thorough review of the literature may reveal more answers to the above question and contribute in some part to the recommendations for the primary research question. The following qualitative narrative analysis highlights certain key documents from the four preset categories used in the literature review chapter. The documents were selected based on their components, authors, and the amount of impact they play in establishing a national ITV system.

Category 1–Federal Government Documents

The official office documents from DHS and FEMA on their efforts toward ITV are troubling. The DHS is doing an adequate job at evaluating its measure of effectiveness for disaster relief operations.[44] In regard to its performance in solving the interoperability gap between the different agencies, the last performance report rates the effort "results not demonstrated" with a 39 percent manpower effort on future strategic planning to correct the deficiencies.[45] *Department of Homeland Security Annual Performance Report* demonstrated that DHS emphasis and concentration on resolving the significant lack of common operating picture that continues to defy disaster relief operations is not a priority. The report shows that DHS met only 50 percent of its target performance objectives in Test & Evaluation and Standards (T&E) results.[46] The T&E is critical to solving the interoperability gap during disaster relief operations because the

[44]Department of Homeland Security, *Department of Homeland Security Annual Performance Report Fiscal Year 2008-2010* (Washington, DC: Government Printing Office, 2010), Ap C, 2.

[45]Ibid., Ap C, 4.

[46]Ibid., 79.

component objective is to "improve and develop standards and test and evaluation protocols for projects, services, and systems used by the Department of Homeland Security and its partners to ensure consistent and verifiable effectiveness."[47] Out of the $32.5 million allocated, only $69,000 was obligated for the Command, Control, and Interoperability Program (CC&I). This small apportionment is 9 percent of the component lead's fiscal budget. In addition, the Test and Evaluation and Standard Program, which has a similar mission of the CC&I program, but falls under the Science and Technology component, was allocated $32,518 in FY08.[48] The plan for FY09 and FY10 budget added only a few hundred dollars increase to the program. In FY2008, the program had a target goal of standardizing 20 systems. DHS reported that it was only able to standardize five (5) systems under its jurisdiction due to an"irregular standards development pipeline which is impacted by individuals and organizations outside the program."[49]

In 2008, FEMA spent $171,262 to "improve the response to domestic emergencies and special events by ensuring logistics management capabilities exist to provide the full-range of necessary assets."[50] The performance measure metric is the average time in hours to provide essential logistical services.[51] FEMA's target was 56 hours. Unfortunately, there was "no data" available to measure against this sub-

[47]Ibid.

[48]Ibid., 85.

[49]Ibid.

[50]Ibid., 90.

[51]Ibid.

objective.[52] The corrective action for FEMA for FY09 and FY10 is to develop new performance measures that focus on "percentage of complete-site inventories conducted at pre-positioned disaster response storage locations."[53] The target for FY2009 was 90 percent and FY2010, 92 percent complete-site inventories. The incremental expectation for FY2010 will definitely help to identify and correct historical faults and to increase standardization across the organization. The next category goes into more detail analysis of standardization practices.

Category 2–Military Doctrine and Standing Operating Procedures

The purpose of joint doctrine is to provide guidance and direction that facilitates an environment that promotes unity of effort. Unity of effort is gained by sharing the same information and seeing common elements of the environment. The military has done a great job adapting and conforming to this new way of operating. The NORTHCOM J4 staff should be applauded for their tireless and extreme efforts to produce specific and clear guidance on what ITV system is to be used when they are the supporting military service to FEMA during disaster relief operations. Their CONOP specifies to all players that fall under their command and control what specific system to use to gain total asset visibility. The NORTHCOM headquarters recognizes that there are several ITV available by each player but given access restrictions and the lack of AIS to feed into FEMA systems, NORTHCOM has directed that GTN or IRRIS function as the ITV system of record. GTN is web-based and therefore is available and accessible by all

[52]Ibid.

[53]Ibid.

players. The system has all the required data fields to allow logistics managers to synchronize, distribute and view the movement of commodities from point of origin to final destination. Since GTN is a DoD funded program, acquiring the application should not be an obstacle. All the key players responding to a national disaster fall under the DoD umbrella. It is apparent that the military is addressing the challenges of working in a joint interagency environment. The joint and interagency doctrine and published concept of operations serve as templates to help mitigate the uncertainty that is resident during natural disasters.

Category 3–Books

Several books are written on historical accounts of national catastrophic incidents. The book by Lieutenant General Russell Honoré' was selected because of its applicability to the research topic and because the researcher could follow up with additional questions when he came to lecture at Fort Leavenworth, Kansas in 2009. Lieutenant General Honoré's book provides a personal account of a commander's experience during one of the largest military support to civil authorities. His book provides insight to the challenges faced at the strategic level, more specifically, the hazy command and control relationship when working in an interagency-joint environment. Even though his book does not go into finite details on ITV, the book does emphasize the mistakes that were made and accentuates the important take aways during Hurricane Katrina. His top lessons learned were parallel planning with all players and having an interoperable communication system in which all players can communicate. Lieutenant General Honoré touched on some of these points during his lecture at Fort Leavenworth, Kansas. To try and gain firsthand account information, the researcher was one of a few personnel

allowed to meet with him after his lecture. When asked the question by the researcher, "Did his organization have challenges with visibility of assets?" He implied, "not his unit." This is indicative of how the military ITV systems, MTS or SMS, were able to affect the responsiveness of a national hurricane incident.

Category 4–Internet Sites and Interviews

Internet Sites

From the different articles presented in this research, two had distinctive and significant points that need highlighting: "SDDC Partners with, Provides IRRIS Technology to FEMA," and the second, "Where Is My Stuff?" These two articles are linked to the researcher's recommendation and to the joint-interagency doctrine. Even though these two articles are represented in this section, all the articles were used for analysis.

The importance of Military Surface Deployment & Distribution Command *News Release*, "SDDC partners with, provides IRRIS technology to FEMA," is that FEMA acquired a very powerful ITV system that they could mandate to be the system of record. The IRRIS system is also linked to NORTHCOM's ITV concept of the operations. As stated earlier, NORTHCOM would prefer that either IRRIS or GTN serve as the system of record. As the lead federal agent for national incidents, it is clear that FEMA now has the capability to fully implement stringent guidance for all players to use GTN or IRRIS as the system of record during hurricane relief operations.

Thomas Monzagol and Eleni Brown wrote an attention-grabbing article titled, "Where's My Stuff?" The article was selected because it ties in nicely with the previous mentioned doctrine on joint logistics environment-wide (JLE-wide). As mentioned earlier

in chapter 2, the JLE-wide process allows logistics managers to contribute to the commander's strategic problem by answering his proposed questions like, "Where is my stuff ?" "How will it get there?" and "When will it get there?"[54] These questions, which are asked during every military and national incident, could be accurately answered and depicted through an ITV system. To determine how strategic logistics planners and managers answered these tough questions, the researcher personally contacted some of them.

Interviews

The most reliable and accurate information came from the email traffic and candid phone conversations with a FEMAs logistic planner, a NORTHCOMs J4 staff officer and the extended email chain correspondence between SOUTHCOM and other key personnel from different organizations. Their candid testimony on the method used to track and share information on commodity movement invigorated the importance of the research. The common thread pulled from the open dialogue is that each player is comfortable with their own way of doing things. This lack of unity of effort and the unwillingness to adapt and change affects policy implementation and standardization of procedures.

Summary

This chapter consisted of two parts. The first was analysis of the primary research methodology and the second was an examination of specific literature. Based on the two

[54]Joint Forces Command, United States, Joint Publication 4-0, *Joint Logistics* (Suffolk, VA: Joint Warfighting Center, 2008), I-8.

different analysis approaches, the researcher was able to extract constructive findings. These findings were consistent with issues surfaced during the research process which made it easy for the researcher to focus on the problem and make recommendations. The proposed recommendations, which focus on a policy and a plan, are discussed in detail in the next chapter.

CHAPTER 5

RECOMMENDATIONS

> . . . in its relationship to strategy, logistics assumes the character of a dynamic force, without which strategic concept is simply a paper plan.
>
> -- Commander C. Theo Vogelsang, USN

The research led to two recommendations. The first involves a change in rewording of current national policy. The second recommendation is a strict enforcement of a contingency plan by DoD. Both recommendations are feasible and practical.

The research concludes that FEMA needs to amend its NIMS Compliance Objectives documents. More specifically, objective 28, "[u]tilize systems, tools, and processes to present consistent and accurate information (e.g., common operating picture) during an incident/planned event" needs revision. The objective needs more specificity and clarity on the internal architecture of the COP and ITV systems. It needs to focus internal applications architecture to ensure the AIS of each tribe or state can link into the systems of record of both FEMA and NORTHCOM. Giving the states latitude on which systems to purchase might slow the national integration plan. The transition phase will undoubtedly require additional time and money to implement. FEMA should delay the compliance year to calendar year 2013. FEMA should also provide additional funding to governing federations for the transition. This proposed recommendation restricts some governing body's selection, but if the endstate is to have everyone sharing information and gaining a common operating picture to provide almost-real time visibility during a natural disaster, the rewrite must be enforced. The individual parties that do not want to

conform and wish to rely on a closed circuit system, should be vetoed and monetary grants withheld.

NORTHCOM's *In-Transit Visibility (ITV) Concept of the Operations (CONOPS)* is an in-depth analysis of systems that are available, who has access to the systems and, based on other known considerations, which system would best support all players during national incidents. The CONOP addresses all the challenges faced during national incidents and provides a realistic and reliable solution that is nested at all echelons of strategic DoD logistics organizations. The CONOP recommends that GTN serve as the ITV system of record during hurricane relief operations. The program is accessible to all DoD organizations and therefore should be endorsed by the Secretary of Defense.

Lessons learned from disasters are impacted by many people and organizations. The magnitude and sheer force of hurricanes change peoples' lives in a second. The lessons learned from a hurricane that occurred over 400 years ago are still applicable today. Yet, over time, much has been done to better prepare for hurricanes. A large number of mitigation plans are in place to lessen the blow of what is left after a hurricane. Nevertheless, the problem of gaining ITV during hurricane natural disaster response operations continues to haunt FEMA and NORTHCOM.

Future Research Needed on ITV

To truly dissect the problem of ITV during national incidents, a detailed ITV application program list of each governing official, from tribal to national level, needs to be generated. From there, graphically display the results to determine the interoperability gaps. Once the broken links are identified, proactive measures are recommended to

bridge the gaps. In order to accomplish this detailed architecture research, it would need FEMAs endorsement and personnel to assist in the study.

Summary

Natural disasters are becoming all too frequent. The ability to respond to them has improved since the hurricane of 1635. The one area that continues to stand out is establishing a common operating picture of supplies as they moves through the supply pipeline to the incident site. These challenges are manifested by the lack of specific guidance set out in FEMA's NIMS Compliance Objective documents. Even if the documents are not rewritten, based on this research recommendation, NORTHCOM's CONOPs provide enough detail and guidance to all players on which system is best to gain ITV during hurricane relief operations. The need for corrective action is now. The 18 year trend since Hurricane Andrew needs to be stopped. The only way to truly be responsive and effective in today's joint-interagency environment is to have buy-in by all players to the holistic objective to using the same ITV system for a common operating picture.

APPENDIX A

PROPOSED CONVENIENT SAMPLE QUESTIONNAIRE

Below are the list of questions the researcher drafted that were to be included as part of the primary research methodology. The questionnaire was never sent out due the researcher's inclination that respondents would potentially receive reprisal on answering the questions truthfully and the respondents had no confidence that their identity would be kept confidential.

1. What system do you use to track supplies during a national incident?

2. Do you use the program IRRIS or GTN?

3. Does IRRIS or GTN have all the required functions to account for and gain visibility of supplies as it moves through the supply management system?

4. Any additional features you would recommend for the system?

5. What do you think is the single biggest challenge with gaining a common operating picture during an incident?

6. Do you have any additional information you would like to present on the research topic?

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